

**ABSTRACT OF THE DISCLOSURE**

[1072] We present a methodology for transforming concurrent data structure implementations that depend on garbage collection to equivalent implementations that do not. Assuming the existence of garbage collection makes it easier to design  
5 implementations of concurrent data structures, particularly because it eliminates the well-known ABA problem. However, this assumption limits their applicability. Our results demonstrate that, for a significant class of data structures, designers can first tackle the easier problem of an implementation that does depend on garbage  
collection, and then apply our methodology to achieve a garbage-collection-  
10 independent implementation. Our methodology is based on the well-known reference counting technique, and employs the double compare-and-swap operation.